

**ROUTING ENGINE FOR TELECOMMUNICATIONS NETWORK**

**Abstract of the Invention**

A system for automated installation of a communication line using an optimal route between a source location and a destination location is disclosed. The system includes a routing engine providing an automated design process for rendering the optimal route. The routing engine utilizes a routing algorithm to select the optimal route from a graph of capacity links defining a plurality of possible routes between the source and destination locations. If, at any time during the design process, the optimal route or capacity links defining the optimal route are detected as unavailable for any reason, the routing engine re-initiates the design process and thereafter selects a new optimal route based upon a new capacity graph built without the previously unavailable capacity link. Once designed, the available optimal route is provided to a command and control engine, which, in turn, manages the installation of the communication line using the optimal route. The command and control engine manages the process for assigning the optimal route in the provisioning system.

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